



## INTRODUCTION

In 1982, the Jefferson Soil and Water Conservation District (SWCD), in cooperation with the USDA, Soil Conservation Service (SCS) took part in the National Resources Inventory (NRI). Information was collected on over 200 sample units to provide county reliable resource data.

This inventory provided natural resource data on (1) land use, (2) conservation treatment needs, (3) prime farmland, (4) potential cropland, (5) sheet and rill erosion, (6) flood prone areas, (7) wetlands, and (8) small bodies of water.

The study identifies erosion and land management problems in Jefferson County. These problems were addressed and priorities set in the District's long-range program. Top priorities include:

1. Coal Stripping Reclamation
2. Youth Education
3. Woodland Management
4. Land Use
5. Cropland Erosion
6. Drinking Water

This publication distributes the results of the Jefferson County Resources Inventory. The publication describes the soil resource base and highlights some problems that could reduce future soil productivity. Along with reduced production, off site damages could be expected. The primary objective of the Jefferson SWCD is to promote the wise use of the soil resource base in Jefferson County.

The information in this publication, like all information developed from a statistical study, has varying degrees of reliability or confidence levels. All values expressed here, representing over 10 percent of the county area, have a confidence level greater than 90 percent or they are at least 90 percent accurate. Smaller values, those representing less than 10 percent of the total county area, will be less than 90 percent accurate.

September 1985

## Land Use

Land area measurements were made for Jefferson County during the 1980 Census by the U.S. Department of Commerce.

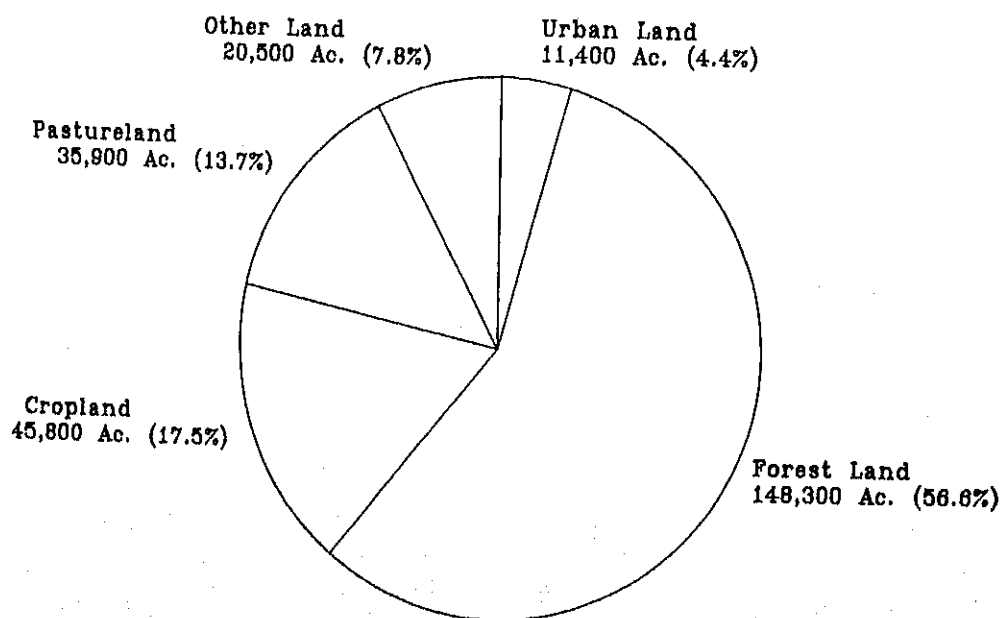
Table 1. Jefferson County Area Measurements

|   |               |
|---|---------------|
| Nonfederal Land and Small Bodies of Water | 261,900 Acres |
| Federal Land                              | 0 Acres       |
| Census Water (Large Bodies of Water)      | 400 Acres     |
| Total Surface Area                        | 262,300 Acres |

This report addresses only nonfederal land.

Figure 1.

## Jefferson County Land Use



TOTAL NONFEDERAL ACREAGE IN JEFFERSON COUNTY = 261,900 ACRES

### KEY POINT:

- o Forest land is the largest land use in the county.

## Land Use by Capability Class

Soils can be classified in a number of ways. SCS uses a land capability classification system that groups soils on the basis of their ability to produce common cultivated crops and pasture plants without deterioration. Land capability classes and subclasses in Jefferson County are based on the soil survey.

Capability classes are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of agricultural use.

Class III soils have severe limitations that reduce the choice of agricultural use.

Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Each capability class except Class I has subclasses to identify specific limitations. The letter "e" stands for erosion risk; "w" for wetness; and "s" for soils limited mainly because they are shallow, droughty, or stony.

Table 2. Rural Land Use Acreage by Capability Class

| CLASS | CROPLAND<br>Acres | PASTURELAND<br>Acres | FOREST LAND<br>Acres | OTHER RURAL<br>LAND<br>Acres | TOTAL   |
|-------|-------------------|----------------------|----------------------|------------------------------|---------|
| II    | 11,400            | 4,600                | 8,100                | 700                          | 24,800  |
| III   | 17,500            | 10,400               | 15,800               | 1,700                        | 45,400  |
| IV    | 10,600            | 8,900                | 27,100               | 4,000                        | 50,600  |
| V     | 300               | 400                  | 0                    | 400                          | 1,100   |
| VI    | 4,800             | 8,200                | 43,700               | 4,100                        | 60,800  |
| VII   | 1,200             | 3,000                | 28,700               | 800                          | 33,700  |
| VIII  | 0                 | 400                  | 24,900               | 800                          | 26,100  |
| NA    | 0                 | 0                    | 0                    | 1,600                        | 1,600   |
| TOTAL | 45,800            | 35,900               | 148,300              | 14,100                       | 244,100 |

KEY POINTS:

- o Sixty-three percent of all cropland is on Classes II and III.
- o Thirty-six percent of all cropland is on Classes IV, VI, and VII.
- o The majority of Classes IV, VI, VII and VIII is in forest land.

## Prime Farmland

Prime farmland is one of several kinds of important farmlands defined by the U.S. Department of Agriculture. It is of major importance in providing the Nation's short and long range needs for food and fiber. Prime farmland soils are defined as the soils that are best suited to producing food, fiber, forage, feed, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland is also the easiest and least costly to develop for non-agricultural uses. Urbanization and other land uses have the potential to consume significant areas of prime farmland. Decisions need to be made at the local level to encourage wise use of agricultural lands.

Jefferson County has 13,300 acres of prime farmland with all of it in Capability Classes II and III.

Table 3. Prime Farmland by Rural Land Use

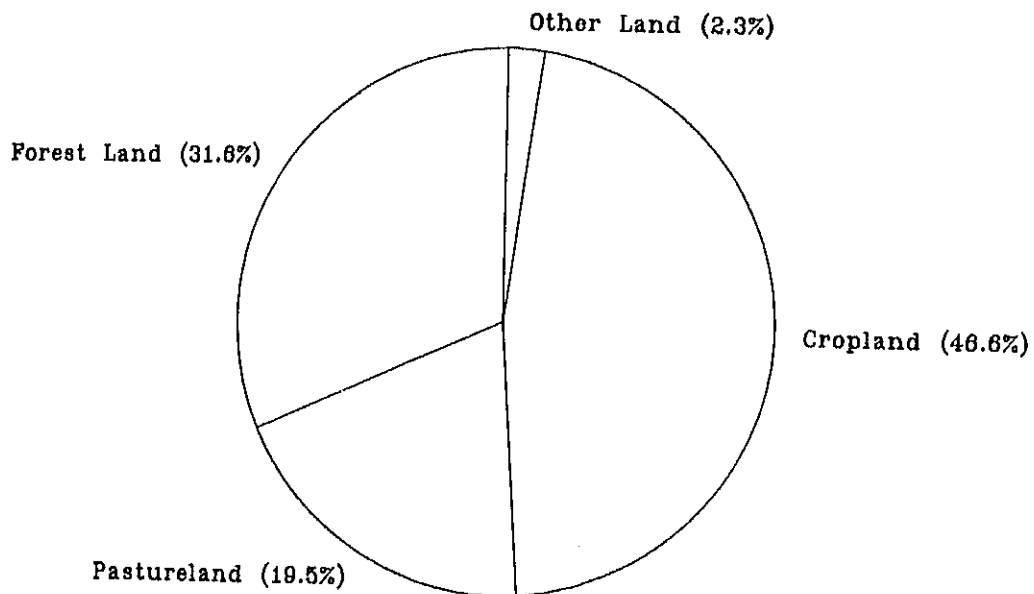
| LAND USE    | TOTAL ACRES | PRIME FARMLAND |         |
|-------------|-------------|----------------|---------|
|             |             | Acres          | Percent |
| Cropland    | 45,800      | 6,200          | 14      |
| Pastureland | 35,900      | 2,600          | 7       |
| Forest Land | 148,300     | 4,200          | 3       |
| Other Land  | 14,100      | 300            | 2       |
| TOTAL       | 244,100     | 13,300         | 5       |

Almost half of the prime farmland in the county is currently cropland. Figure 2 illustrates the uses of prime farmland.

Figure 2.

## Use Of Prime Farmland

Jefferson County



### Soil Erosion

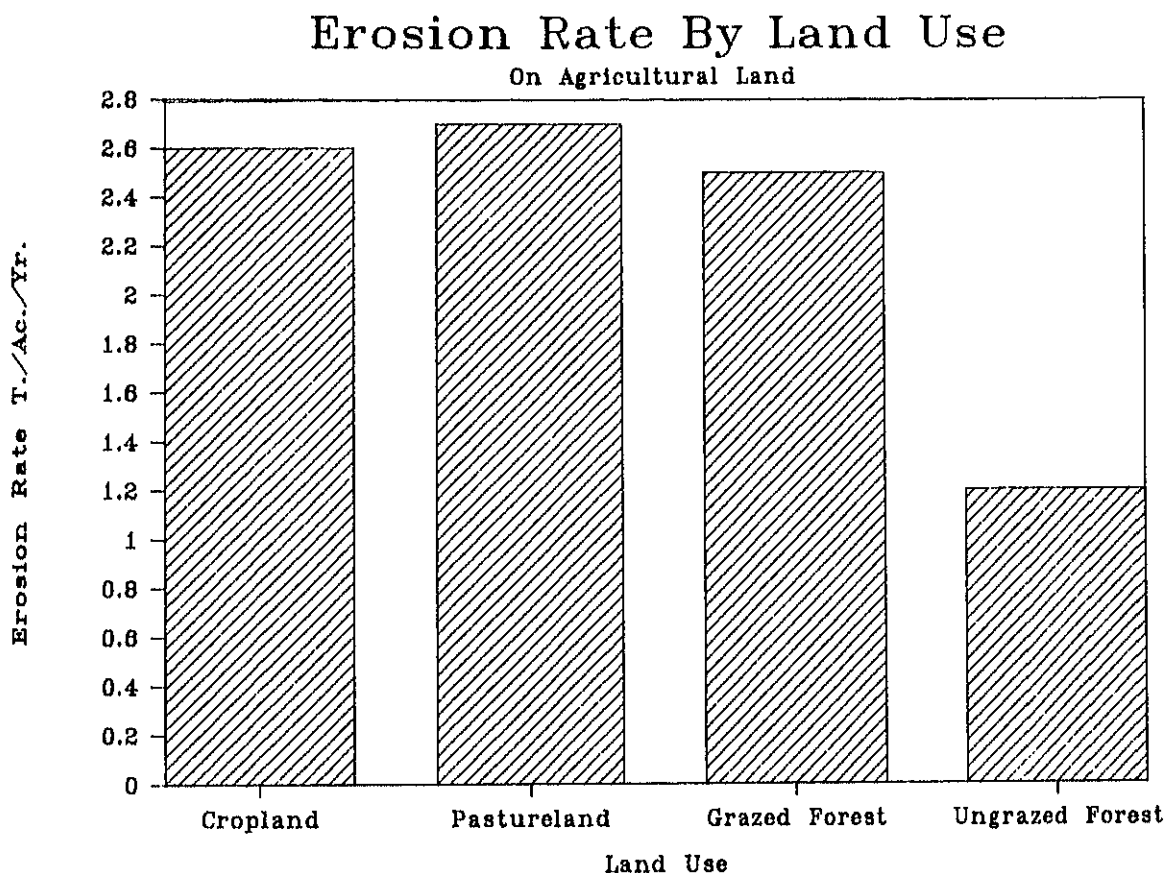
Soil erosion is a continuously occurring natural process that loosens and transports soil particles. Erosion occurs slowly on undisturbed forest land and areas with adequate permanent vegetative cover. Soil losses are quite high on sloping cropland that is continually cultivated and left unprotected during several months every year.

More than 398 thousand tons of topsoil erode on Jefferson County agricultural land annually. Thirty percent of the erosion is on cropland.

Table 4. Annual Soil Erosion by Agricultural Land Use

| LAND USE             | ACRES   | TONS    | TONS/ACRE |
|----------------------|---------|---------|-----------|
| Cropland             | 45,800  | 118,400 | 2.6       |
| Pastureland          | 35,900  | 96,300  | 2.7       |
| Grazed Forest Land   | 7,300   | 18,500  | 2.5       |
| Ungrazed Forest Land | 141,000 | 165,000 | 1.2       |
| TOTAL                | 230,000 | 398,200 |           |
| AVERAGE              |         |         | 1.7       |

Figure 3.



KEY POINTS:

- o The average cropland erosion rate is 2.6 tons per acre per year in Jefferson County.
- o The pastureland erosion rate is slightly higher than cropland at 2.7 tons per acre per year.
- o The erosion rate on grazed forest land is two times the erosion rate on ungrazed forest land.

Table 5. Erosion on Nonfederal Cropland by Capability Class and Subclass

| CLASS AND SUBCLASS | ACRES  | TONS    | TONS/ACRE |
|--------------------|--------|---------|-----------|
| Ile                | 9,000  | 7,100   | 0.8       |
| IIw                | 2,400  | 100     | 0.0       |
| IIIe               | 17,100 | 42,300  | 2.5       |
| IIIw               | 400    | 0       | 0.0       |
| IVe                | 10,600 | 53,600  | 5.1       |
| V                  | 300    | 0       | 0.0       |
| VIe                | 2,600  | 11,600  | 4.5       |
| VIs                | 2,200  | 500     | 0.2       |
| VIIe               | 1,200  | 3,200   | 2.7       |
| TOTAL              | 45,800 | 118,400 |           |
| AVERAGE            |        |         | 2.6       |

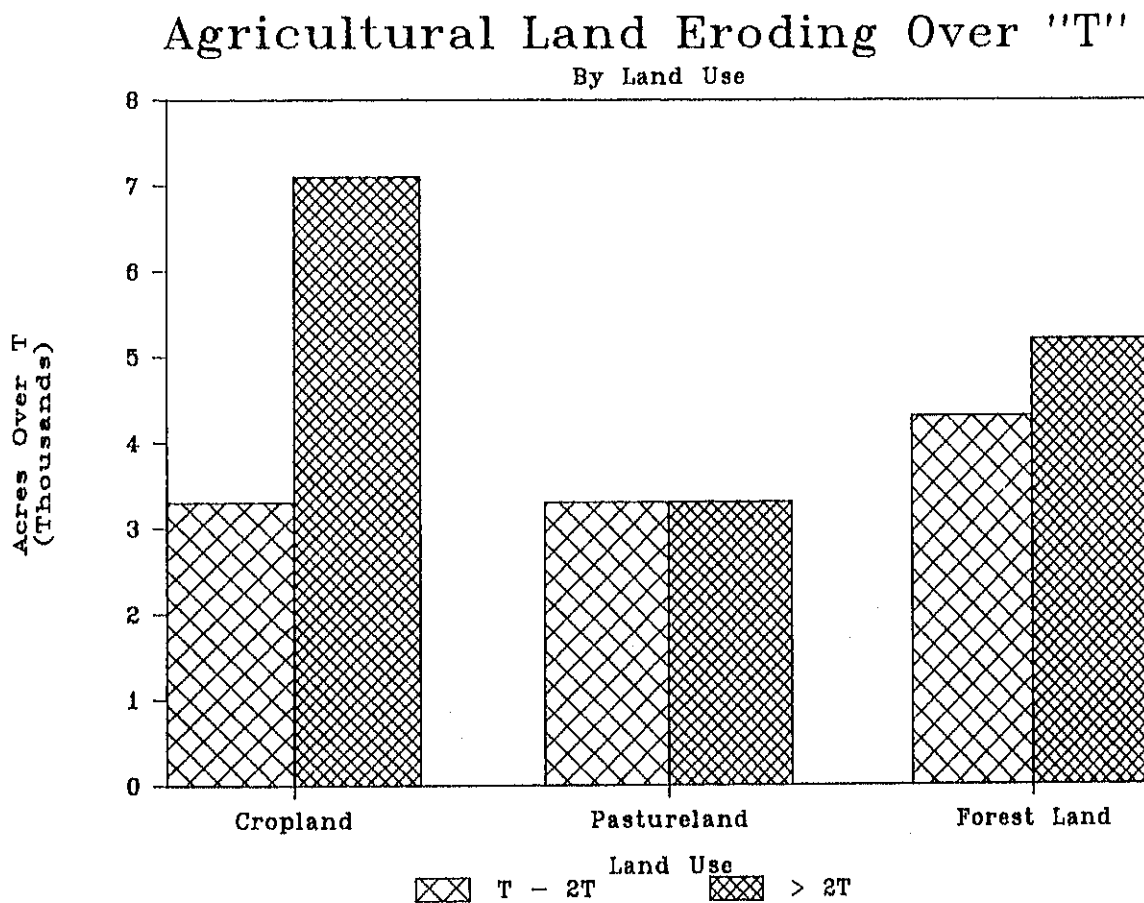
KEY POINTS:

- o Forty-five percent of all cropland erosion is on IVe soils.
- o Class IVe has the highest erosion rate despite the fact that Classes VI and VII have steeper soils.

Soil can tolerate small amounts of erosion and remain productive for agriculture. When erosion is above this tolerable limit, the soil resource base cannot be maintained and the future ability of the soil to produce crops is threatened. The tolerable soil loss ("T") ranges from three to five tons per acre per year, with most of the soils in Jefferson County having a soil loss of four.

More than 26,000 acres of agricultural land are eroding at rates greater than "T". There are 15,600 acres in the county eroding at rates greater than two times "T". These acres represent a serious threat to the productive capacity of the soil resource base.

Figure 4.



KEY POINTS:

- o 10,400 acres of cropland are eroding over "T".
- o 9,500 acres of forest land are eroding over "T".

Table 6. Cropland in Relation to "T"  
by Capability Class and Subclass

| CAPABILITY<br>CLASS | TOTAL  | LESS<br>THAN "T" | "T" - "2T" | GREATER<br>THAN "2T" |
|---------------------|--------|------------------|------------|----------------------|
| -----ACRES-----     |        |                  |            |                      |
| IIE                 | 9,000  | 8,600            | 0          | 400                  |
| IIW                 | 2,400  | 2,400            | 0          | 0                    |
| IIIe                | 17,100 | 13,000           | 2,100      | 2,000                |
| IIIW                | 400    | 400              | 0          | 0                    |
| IVe                 | 10,600 | 6,300            | 400        | 3,900                |
| V                   | 300    | 300              | 0          | 0                    |
| VIe                 | 2,600  | 1,400            | 800        | 400                  |
| VIIs                | 2,200  | 2,200            | 0          | 0                    |
| VIIe                | 1,200  | 800              | 0          | 400                  |
| TOTAL               | 45,800 | 35,400           | 3,300      | 7,100                |

KEY POINTS:

- o Twenty-three percent of all cropland is eroding over "T".
- o Fifteen percent of all cropland is eroding over "2T".
- o Eighty-one percent of all acres eroding over "T" are in Capability Classes IIIe and IVe.
- o Crop rotations contain hay for a number of years which limits erosion.

Table 7. Pastureland in Relation to "T"  
by Capability Class and Subclass

| CAPABILITY<br>CLASS | TOTAL  | LESS<br>THAN "T" | "T" - "2T" | GREA<br>THAN " |
|---------------------|--------|------------------|------------|----------------|
| -----ACRES-----     |        |                  |            |                |
| IIE                 | 3,400  | 3,400            | 0          | 0              |
| IIW                 | 700    | 700              | 0          | 0              |
| IIS                 | 500    | 500              | 0          | 0              |
| IIIe                | 10,000 | 9,300            | 700        | 0              |
| IIIS                | 400    | 400              | 0          | 0              |
| IVe                 | 8,600  | 7,300            | 300        | 1,000          |
| IVS                 | 300    | 300              | 0          | 0              |
| V                   | 400    | 400              | 0          | 0              |
| VIe                 | 7,100  | 5,200            | 1,500      | 400            |
| VIS                 | 1,100  | 700              | 0          | 400            |
| VIIe                | 3,000  | 1,100            | 400        | 1,500          |
| VIII                | 400    | 0                | 400        | 0              |
| TOTAL               | 35,900 | 29,300           | 3,300      | 3,300          |

Twenty-four percent of all pastureland is currently eroding over "T". Pastureland acres over "T" and the high erosion rates generally occur on steeper slopes. Seventy percent of all pasture eroding over "T" is on Capability Classes VI, VII, and VIII.

Table 8. Forest Land in Relation to "T"  
by Capability Class and Subclass

| CAPABILITY<br>CLASS | TOTAL   | LESS<br>THAN "T" | "T" - "2T" | GREAT<br>THAN " |
|---------------------|---------|------------------|------------|-----------------|
| -----ACRES-----     |         |                  |            |                 |
| IIE                 | 5,700   | 5,700            | 0          | 0               |
| IIW                 | 2,400   | 2,400            | 0          | 0               |
| IIIe                | 14,900  | 14,900           | 0          | 0               |
| IIIS                | 900     | 900              | 0          | 0               |
| IVe                 | 26,400  | 25,600           | 400        | 400             |
| IVS                 | 700     | 700              | 0          | 0               |
| VIe                 | 41,300  | 37,500           | 2,100      | 1,700           |
| VIS                 | 2,400   | 2,400            | 0          | 0               |
| VIIe                | 26,700  | 22,200           | 1,400      | 3,100           |
| VIIIS               | 2,000   | 2,000            |            |                 |
| VIII                | 24,900  | 24,500           |            |                 |
| TOTAL               | 148,300 | 138,800          |            |                 |

Six percent of all forest land is eroding over "T". Severely eroding forest land generally occurs on steeper slopes. Ninety-two percent of all forest land over "T" is on Capability Classes VI, VII, and VIII. Many areas of the eroding forest land are now being grazed by livestock or have been grazed in the past.

The inventory reveals very high erosion on other rural land uses. This is a reflection of extremely high erosion rates on surface mined areas that have been previously mined or are currently being mined.

Land that is currently being mined must, by law, have all erosion and sediment confined to the site and be reclaimed after mining is completed. Current strip mining is carried out with a permit issued by the Ohio Department of Natural Resources, Division of Reclamation.

Abandoned mined areas with high erosion rates generally require major earthmoving and land reconstruction activities to solve erosion problems.

#### Conservation Treatment Needs

Many acres of Jefferson County agricultural land need one or more different types of conservation treatment to either protect or improve soil and water resources. The different conservation practices used to accomplish these objectives vary by land use.

Cropland treatment usually involves practices like conservation cropping systems, conservation tillage, contour farming, contour stripcropping, terraces and subsurface drainage systems. Pastureland practices include rotational grazing, pasture management and pasture planting. These practices may be used to protect or improve soil, water and plant resources. Conservation practices needed on forest land may include livestock exclusion, timber stand improvement and tree planting. Land designated as adequately protected is properly managed for production and protected from excessive erosion.

Table 9. Conservation Treatment Needs and Percent  
By Land Use

| LAND USE    | TOTAL<br>ACRES | TOTAL ACRES<br>NEEDING TREATMENT | % TOTAL ACRES<br>NEEDING TREATMENT |
|-------------|----------------|----------------------------------|------------------------------------|
| Cropland    | 45,800         | 13,500                           | 29                                 |
| Pastureland | 35,900         | 12,700                           | 35                                 |
| Forest Land | 148,300        | 42,000                           | 28                                 |
| Other Land  | 14,100         | 5,300                            | 38                                 |
| TOTAL       | 244,100        | 73,500                           | 30                                 |

#### SUMMARY

Agriculture accounts for 88 percent of Jefferson County land use with 17 percent used as cropland. About 57 percent of Jefferson County is forest land.

About 23 percent of all cropland is losing soil at excessive rates. Productivity will be reduced if erosion is allowed to continue at these high rates.

Conservation treatment is needed to conserve the resource base or increase productivity on 30 percent of all agricultural land.